



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,349	03/01/2004	Mark D. Kuehn	K21-001	9379
7590	04/05/2006			
R. Neil Sudol 714 Colorado Avenue Bridgeport, CT 06605-1601			EXAMINER MAI, ANH T	
			ART UNIT	PAPER NUMBER
			2832	

DATE MAILED: 04/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/790,349

Applicant(s)

KUEHN, MARK D.

Examiner

Anh T. Mai

Art Unit

2832

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Srinivasan [5999000] in view of Meyer et al. [5043320].

Srinivasan discloses RF coil of a copper tube, coating with noble [precious metal] such as silver, gold platinum to increase the Q-factor of RF coil [col 15, lines 10-25]. Srinivasan discloses the invention as claimed as cited above except for an inner layer of transition metal coating. Meyer discloses copper tube 1, silver layer coating 2 and nickel barrier layer 6 [transition material] to suppress the migration of oxygen out the to core [col 3, lines 22-31, figure 4] and silver is different metal than nickel. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to add a transition metal coating as taught by Meyer to the copper tube as disclosed by Srinivasan. The motivation would have been to substantially suppress the migration of oxygen out the to core as mentioned above. Therefore, it would have been obvious to combine Meyer with Srinivasan.

Preferably the RF coil primary and secondary are made of copper, either etched to a rigid or a flexible printed circuit board, or used as a milled copper sheet of definite thickness. Copper tubes may also be employed depending on the use of purpose including the product packaging needs. For example, the whole body RF coil is generally made of copper tubes, whereas the surface coil is normally etched on a flexible printed circuit board. It is noted that the RF coils may be covered with a precious metal to enhance their performance, and to minimize or eliminate the oxidation of copper over time. Tin is used to reduce or eliminate the oxidation of copper, however tin does not enhance the coil performance. The RF coils may be coated with precious metals such as silver, gold or platinum, etc., which have increased conductivity, to help reduce the resistance and increase the Q factor of a RF coil ($Q = \omega L/R$). Since S/N is proportional to the square root of the coil Q, any increase in Q will result in an increase in the coil S/N and will result in a lower transmitter power needed for the same experiment.

FIG. 4 shows a diagrammatic section through a wire having a diffusion barrier before the heat treatment. The reference symbols 1, 2 and 3 and their meaning correspond precisely to those of FIG. 1. 6 is a diffusion barrier composed of tantalum, niobium, vanadium or nickel, which substantially suppresses the migration of oxygen out of the core material. Instead of being composed of one of the abovementioned substances, the diffusion barrier 6 may also be composed of an alloy of at least two of said elements.

With respect to claim 2, Meyer discloses the transition material is nickel.

With respect to claim 4, Srinivasan discloses gold.

3. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Srinivasan in view of Meyer et al. as applied in claims 1-4 above, and further in view of Romano et al.

[4919291].

Art Unit: 2832

Srinivasan in view of Meyer discloses the claimed invention except for the pure gold on the layer.

Romano, however, discloses tube comprised of copper flashed with nicked coating and then plated with 99.9 gold [pure gold]; see column 3, lines 37-41.

Because Srinivasan in view of Meyer are from the same field of endeavor, pure gold coating layer on copper tube as disclosed by Romano would have been recognized as an art pertinent art of Srinivasan in view of Meyer.

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the copper coil, such as the one disclosed by Srinivasan in view of Meyer, with an pure gold material, such as disclosed by Romano for the purpose of pure gold coating to copper and nickel to yield an oxidation and corrosion resistant surface [col 1, lines 60-62].

With respect to claims 7-9, Srinivasan in view of Meyer discloses the claimed invention except for the thickness of the coating layers. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have thickness of the inner layer and outer layer of 1000 microns and 10 microns respectively, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

4. Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2832

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh T. Mai whose telephone number is 571-272-1995. The examiner can normally be reached on 5/4/9 Schedule.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on 571-272-1990. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

040206
am



**ANH MAI
PRIMARY EXAMINER**